

Comments on NJDEP White Paper: SCS004A - Process Heaters/ Boilers in a Petroleum Refinery

Control Measure Summary from NJDEP White Paper	Emissions (tons/year) in NJ (from NJDEP White Paper)		Comments on NJDEP White Paper
<b>2002 existing measure:</b> Heaters and boilers burning liquid fuel are equipped with Low NOx burners. Most gas fired heaters and boilers in New Jersey are equipped with Ultra-Low NOx Burners.	<b>NOx</b> in 2002	3074	NJDEP should reference the source(s) for the NOx emission data so that comments can be provided. As presented, there is insufficient background information to assess the accuracy of the emission estimates.
<b>Candidate Measure 1:</b> Replace Low NOx burners with Ultra-Low NOx Burners (ULNB) and burn gas fuel only  <b>Emission Reductions:</b> 75 to 90% of NOx.  <b>Control Cost:</b> < \$1000 per ton of NOx removed  <b>Timing of Implementation:</b> Already in place in majority of the units.  <b>Implementation Area:</b> OTC	<b>NOx</b> 2002 Base: Reduction: 2009 Remaining:	3074  <u>- 573</u> 2501	The emission reductions of 75% to 90% of NOx identified by Candidate Measure 1, Replace Low NOx burners with Ultra-Low NOx Burners (ULNB) and burn gas fuel only, is grossly inaccurate and misleading. We are in the process of replacing conventional burners with ULNB in two heaters with a common stack (186 and 233 MMBTU/hr respectively) at one of or facilities. The expected NOx emissions reduction is 112 tons. The capital cost of the project is \$2.5 millions, which represents a cost of \$22,000/ton of NOx removed. The capital cost of equipping the same heater with an SCR is \$9,267,000, which results in a cost of \$54,000/ton of NOx removed. In another project, a 60 MMBTU/hr heater is being reconstructed, including replacing the LNB (0.1 lb NOx/MMBTU) with ULNB (0.035 ln NOx/MMBTU), at a cost of \$7 MM. The expected NOx emissions reduction is 17 tons. Considering only the cost replacing the burners, the cost per ton of NOx removed is approximately \$15,000. The cost indicated above for either project does not include the additional operating and compliance costs associated with the operation of the ULNB.
<b>Candidate Measure 2:</b> Use Selective Catalytic Reduction (SCR) on boilers and heaters with heat input capacity of 250 MMBtu/hr or greater  <b>Emission Reductions:</b> 85 to 90% NOx  <b>Control Cost:</b> \$2000 to 5000 per ton of NOx removed.  <b>Timing of Implementation:</b> Already in place for some boilers and large process heaters.  <b>Implementation Area:</b> OTC			NJDEP cost estimate of is very unrealistic. See the above comment on replacing conventional burners with a SCR. Assuming a very conservative estimate for installing a SCR in a 250 MMBTU/hr heater of \$5 MM, and that all the 570 expected NOx reductions are from that heater, the cost per ton would be approximately \$10,000/ton. NJDEP should provide cost calculations and references for the basis of the cost calculation.
<b>Policy Recommendation of State/Workgroup Lead:</b> Ultra-Low NOx Burners (ULNB) using gaseous fuel is recommended for all cases. SCR is recommended for large capacity heaters and boilers.			The candidate control measures presented in this white paper (SCS004A) are inconsistent with those presented in the Stationary Combustion Source Workgroup report, "A Collaborative Report Presenting Air Quality Strategies for Further Consideration by the State of New Jersey" dated October 31, 2005. The candidate measures evaluated in this white paper are not presented as one of the top five most promising control strategies.

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<b>Brief Rationale for Recommended Strategy:</b> ULNB is a low cost technology successfully applied to boilers and process heaters of various designs. SCR can achieve high NOx removal at a reasonable cost. This technology has been successfully applied to boilers and large capacity process heaters.		The implementation of the Ultra-Low NOx burners and SCR on sources without combustion control can result in significant NOx reductions. However, the costs for implementing such a strategy can vary significantly based on site-specific considerations, such as existing control technology, baseline NOx emissions, utilization level, space constraints, and cost of any necessary retrofits. Before any regulatory action, the NJDEP needs to provide detailed information on baseline emissions and control costs, and develop a method to adequately address site-specific considerations. Additionally, NJDEP should consider, and document the impact of mandated future emission reductions that will result from existing agreements and regulations, such as N.J.A.C. Subchapter 18, N.J.A.C. Subchapter 19, PSD, ACO's and Consent Decrees.